Claims

1. A cathode for a battery, comprising a metal hydroxide having a specific surface area of 1 m^2/g or more, as a cathode additive.

2. The cathode for a battery according to claim 1, wherein the specific surface area of the metal hydroxide is 2.5 m^2/g or more.

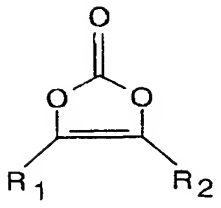
3. The cathode for a battery according to claim 1, wherein the cathode for a battery comprises the metal hydroxide in the amount of greater than 0 wt% and less than 10 wt%.

4. The cathode for a battery according to claim 1, wherein the metal hydroxide is at least one compound selected from the group consisting of $Al(OH)_3$, $Mg(OH)_2$, $Ca(OH)_2$, LiOH and NaOH.

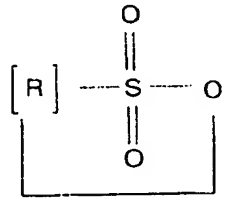
5. A lithium ion battery comprising a cathode, an anode and a non-aqueous electrolyte, wherein the cathode is the cathode for a battery as defined in any one of claims 1 to 4.

6. The lithium ion battery according to claim 5, wherein the electrolyte comprises at least one additive selected from the group consisting of the compounds represented by the following formula 1 to formula 4:

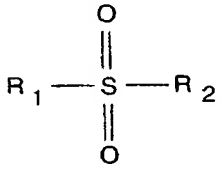
[formula 1]



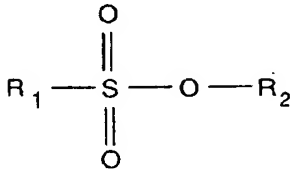
[formula 2]



[formula 3]



[formula 4]



wherein, each of R_1 and R_2 is independently selected from the group consisting of H, a C_1-C_5 alkenyl group, a C_1-C_5 alkyl group, a halogen atom, and a phenyl group and a phenoxy group non-substituted or substituted with a C_1-C_5 alkyl group or a halogen atom (formulae 1,3 and 4); and

R is a C_1-C_5 alkenyl group or a C_1-C_5 alkyl group (formula 2).

7. The lithium ion battery according to claim 6, wherein the compound represented by formula 1 is selected from the group

consisting of VC (vinylene carbonate) and methyl esters, and the compound represented by any one of formula 2 to formula 4 is selected from the group consisting of propane sultone (PS), propene sultone, dimethyl sulfone, diphenyl sulfone, divinyl sulfone and methanesulfonic acid.